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Providing Services and Support during Drought Conditions

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SUMMARY OF REVISIONS: This supplement supersedes Regional Operations Manual Letter (ROML) S-03-02 titled "Drought Information Statements", filed with WSOM Chapter E-12/22, dated July 19, 2002.

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Director, Southern Region

Table of Contents:

1. Purpose. The purpose of this supplement is to describe regional procedures on providing services and support during drought conditions.

2. Introduction. The wide variety and complexity of water resource, fire danger, and agricultural impacts from drought events in the Southern Region place increased importance on our drought monitoring activities and long-range forecasting program. The public, media, many local, state and federal agencies, and private users involved in water management, fire management, and agriculture rely on the NWS for hydrometeorological information and drought outlooks in their area. Therefore, it is incumbent upon the WFOs/RFCs, in collaboration with Drought Monitor personnel, the Regional Climate Service Program Manager (CSPM), and the Regional Hydrologic Services Branch, to closely monitor drought impacts on the economy and to sense public interest in hydrometeorological information pertaining to drought events.

3. Drought Definitions. The World Meteorological Organization has defined four types of drought as follows:

a. Meteorological drought - defined in terms of precipitation deficiencies in absolute amounts for a given time period.

b. Hydrological drought - defined in terms of reduction of streamflow, reduction in lake levels, or lowering of groundwater tables. The frequency and severity of hydrological drought is often defined on a watershed or river basin scale.

c. Agricultural drought – links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, and soil water deficits.

d. Socioeconomic drought – Occurs when physical water shortages start to affect people, individually or collectively. This definition of drought is associated with the supply and demand of an economic good.

4. Procedures

4.1 U.S. Drought Monitor. The U.S. Drought Monitor (USDM) is a synthesis of multiple indices, outlooks, and news accounts that represent a consensus of federal and academic scientists. It is a collaborative effort of the U.S. Department of Commerce, various NOAA/NWS organizations, including the Climate Prediction Center, the National Climatic Data Center, and the National Drought Mitigation Center located in Lincoln, NE. It provides a national assessment of drought conditions by integrating numerous drought indices and input from local experts, including NWS field offices, into a single depiction. It is intended to provide an objective measure of dryness and drought using a suite of indicators. These indicators include agricultural, meteorological, and hydrological measures of dryness/drought.

The WFO Climate Service Focal Points (CSFP) and their backups (otherwise known as a drought focal point (DFP) in this supplement), should sign up with the Drought Monitor list server. The CSFP/DFPs should (1) provide feedback on the weekly drought monitor map; and (2) provide information about drought conditions in their service area.

The DFPs should subscribe to the USDM list server by filling out the "Subscribing to Drought" section at the following web address:

http://drought.unl.edu/mailman/listinfo/drought

You will receive a confirmation email from the USDM once you have been officially added to the USDM list server.

The USDM product is issued every Thursday at 8:30am Eastern Time. It is based on data through 1200 GMT on the previous Tuesday.

4.2 Role of the NWS Southern Region Offices during Drought Conditions. The role of the NWS Southern Region Offices during drought conditions is to provide pertinent hydrometeorological information and data to water managers, local, state and federal agencies and the media. The NWS does not declare when droughts begin or end. Close coordination among the Weather Forecast Offices (WFOs), the River Forecast Centers (RFCs), Southern Region Headquarters, and Drought Monitor personnel are critical to ensure that consistent information is disseminated.

WFOs are responsible for providing additional information and data to customers during drought conditions and for attending state, county, city and user group meetings related to the drought. RFCs are responsible for providing any additional guidance or support that the WFOs may need to meet customer needs.

4.3 Weather Forecast Office Drought Plans

SR WFOs should develop a drought plan to ensure that the office's responsibilities outlined in this supplement are met. The drought plan should describe procedures to be followed during drought conditions to ensure that the office is prepared to provide the necessary service and support. Each State Liaison Office (SLO) should have a copy of the drought plan of each WFO in the state. The State Liaison Office is defined as the WFO whose service area includes the State Capitol. Appendix C contains a list of items to include in a WFO drought plan. Each MIC will designate a DFP. The CSFP, service hydrologist, senior service hydrologist, or hydrology focal point, should serve as the primary/backup DFP. In some cases, the meteorologist in charge (MIC) should serve as the focal point (see section on Role of the SLO). The DFP is responsible for monitoring hydrometeorological conditions, coordinating with other NWS offices, coordinating customer needs, and ensuring that the appropriate products are issued. The DFP is also responsible for developing and updating the office drought plan and ensuring the staff receives training regarding the drought plan. The plan should be filed with the hydrologic services manual (HSM), and referenced in the station duty manual (SDM).

4.4 Onset of Drought Related Services and Support. The WFOs should provide additional information and data to customers and attend drought-related meetings when:

a. A drought has been declared (e.g., by the state, a county, or other officials) in the WFO service area.

b. Conditions are dry enough to cause elevated concern among the public, the media, or other agencies.

When the public, media, and other agencies no longer have concerns about dry conditions, the WFO may terminate their drought-related activities, after coordination with all involved parties.

4.5 Methods for Providing Services and Support During Drought Conditions.

a. WFOs will issue Drought Information Statements, as required. Further details about this product are contained in Sections 5 and 6.

b. Drought-related information and links should be posted on the WFO's web page, especially when public concern over drought conditions is high.

c. The MIC and/or DFP should attend meetings related to drought and provide briefings as needed.

4.6 Role of the SLO Office. When drought conditions extend over several WFO service areas within a state, the MIC of the SLO or his/her designee, will be the voice of the NWS when coordinating with state agencies. The SLO MIC or his/her appointee will represent the NWS at state agency meetings. The SLO may issue drought-related products for the state, as described in Section 4.5, on behalf of all the WFOs who provide services in the state. This will be done in coordination with all affected WFO MICs/DFPs, the supporting RFC(s), and the SR Climate Service Program Manager.

4.7 Coordination. WFOs are responsible for notifying the SLO, adjacent WFOs, supporting RFCs, and the SR Climate Services Program Manager, when abnormally dry conditions exist or when a drought has been declared.

5. Threshold Criteria for Issuance/Expiration of Drought Information Statement

a. WFOs will begin issuing Drought Information Statements based on any of the following criteria:

1. If the Drought Monitor depicts an area of D1 status in the WFO's CWA; or

2. Local assessments of hydrometeorological conditions, based on information from other local, state, or federal agencies/officials, warrant such an issuance.

b. WFOs should discontinue issuing Drought Information Statements based on local assessments of drought related information sources. This could include, but not be limited, to the following:

1. Removal of Drought Monitor D1 status in the WFO's service area or,

2. The mitigation of local drought conditions based on information from local, state, or federal agencies/officials that prompted the issuance of the Drought Information Statement.

c. WFOs are encouraged to use the drought monitoring information available on the National Drought Monitor web page (e.g., experimental PDSI forecast which is based on future temperature and precipitation forecasts) and RFC drought-related information (e.g., RFC precipitation analysis maps) to assist in decision making for product issuance/non-issuance. Appendix D contains other possible information sources.

6. Product Issuance, Expiration, Frequency, and Content

a. WFOs will use the ESF product category to issue the Drought Information Statements. The product format and a sample product are contained in Appendices A and B respectively.

b. When product issuance criteria are met, Drought Information Statements should be issued biweekly following the release of the weekly Drought Monitor on Thursday. The product should be issued in the early afternoon to provide ample time for distribution to media outlets.

c. The product may be issued more frequently based upon local office discretion. More frequent issuances may be based on the following:

1. Media attention.
2. Partner and customer needs
3. Significant changes in hydrometeorological outlooks

d. At a minimum, the Drought Information Statement should contain a headline, synopsis, and outlook. The outlook portion should focus on the upcoming one to two-week period, but may also contain medium/long-range information if there is significant change in updated hydrometeorological outlooks from the Climate Prediction Center.

e. WFOs should use local discretion whether to include information regarding drought impacts, emergency response/actions (e.g, implementation of drought contingency plans, drought disaster declarations, etc.), and/or state, county or municipal restrictions (e.g, water rationing, burning bans, etc.). The decision to include this information should be based on its availability, its significance, or level of media attention.

f. WFOs should include attribution to agencies whose drought information is contained in the Drought Information Statements.

g. WFOs are encouraged to use the various hydrometeorological information sources available in the NWS as input to the Outlook portion of the product. This includes, but is not limited to numerical model outputs, the Climate Prediction Center's hydrometeorological outlooks and drought outlooks, the Hydrometeorological Prediction Center's weekly hazard assessments and QPF products, RFC extended-range hydrometeorological guidance, RFC precipitation analysis graphics, the Regional Climate Centers' sponsored climate history web page (see Appendix D), and CPC and other soil moisture data sources.

h. WFOs should post their Drought Information Statements on their homepage. WFOs may also issue their Drought Information Statements in graphical format. WFOs should also link to other drought monitoring information on their homepage.

i. When product expiration criteria are met, Drought Information Statements should be issued to notify customers of product discontinuance. The statement should contain the factors mitigating the drought conditions.

Appendix A - Product Content and Format - Drought Information Statement

cccESFxxx ALL
FGUS7x Kccc (ccc=station identifier)
UGC **(use county FIPS form of the UGC**)

HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE [office city and state]
[Date/Time Group]

Headline (**Required**)

Synopsis - hydrometeorological conditions during the preceding two weeks (**Required**)

This should include hydrometeorological data showing rainfall deficits for an extended period of time for locations across the CWA or state. These rainfall deficits can be expressed as either a percent of normal or as an absolute value showing the departure of normal, or both. The period of record of the data should clearly be stated to put matters into historical context.

Hydrologic Impacts (*local discretion*)

Fire Danger Impacts (*local discretion*)

Agricultural Impacts (*local discretion*)

Response/Actions (*local discretion*)

Outlook - hydrometeorological outlook and potential impact on drought conditions (**Required)**

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Appendix B - Sample Drought Information Statement

LBBESFSJT ALL
FGUS74 KLUB
TXC125-133-231800

HYDROLOGIC OUTLOOK
NATIONAL WEATHER SERVICE SAN ANGELO TX
109 PM CDT TUE MAY 16 2000

...MODERATE TO SEVERE DROUGHT CONDITIONS CONTINUE ACROSS MOST OF WEST CENTRAL TEXAS...

SYNOPSIS...

THE LATEST PALMER DROUGHT SEVERITY INDEX ISSUED BY THE CLIMATE PREDICTION CENTER SHOWS THAT MOST OF WEST CENTRAL TEXAS CONTINUES TO EXPERIENCE A MODERATE TO SEVERE DROUGHT. SEVERE DROUGHT CONDITIONS ARE OCCURRING ACROSS THE CONCHO VALLEY...NORTHERN EDWARDS PLATEAU AND THE NORTHWEST HILL COUNTRY...WITH A MODERATE DROUGHT ACROSS THE BIG COUNTRY AND HEARTLAND. THESE CONDITIONS ARE EXPECTED TO CONTINUE THROUGH THE END OF MAY AND INTO THE BEGINNING OF JUNE.

RAINFALL HAS CONTINUED TO BE A SCARCE COMMODITY ACROSS WEST CENTRAL TEXAS. RAINFALL IN MAY CONTINUES WELL BELOW NORMAL. THERE HAS BEEN NO RAINFALL REPORTED AT SAN ANGELO REGIONAL AIRPORT...WHICH IS 1.40 INCHES BELOW NORMAL. ABILENE HAS RECEIVED ONLY A TRACE OF RAIN IN MAY...1.37 INCHES BELOW NORMAL FOR THE MONTH. A COUPLE OF STORM SYSTEMS HAVE MOVED ACROSS THE AREA DURING THE FIRST HALF OF MAY. RAINFALL FROM THESE SYSTEMS HAS BEEN RATHER LIGHT. A FEW LOCATIONS ACROSS COLEMAN...BROWN...SAN SABA...MASON AND KIMBLE COUNTIES RECENTLY SAW RAINFALL AMOUNTS APPROACH 1 INCH WITH A COLD FRONT THAT MOVED THROUGH FRIDAY MAY 13...BUT MOST AREAS RECEIVED LITTLE OR NO RAIN. SO FAR THIS YEAR...SAN ANGELO HAS RECEIVED ONLY 1.65 INCHES...4.20 INCHES BELOW NORMAL. ABILENE HAS RECEIVED 2.13 INCHES SO FAR THIS YEAR...4.69 INCHES BELOW NORMAL.

HYDROLOGIC IMPACTS...

THE ONGOING LACK OF RAINFALL HAS HAD DEVASTATING EFFECTS ON AREA RESERVOIRS. HUBBARD CREEK...LAKE BROWNWOOD AND O.H. IVIE ARE NEAR 50 PERCENT OF CONSERVATION STORAGE...BUT MOST RESERVOIRS ARE AT OR BELOW 20 PERCENT. THE RESERVOIRS AROUND SAN ANGELO ARE ESPECIALLY HARD HIT...WITH TWIN BUTTES AT 3 PERCENT AND O.C. FISHER AT 11 PERCENT. MANY COMMUNITIES ACROSS WEST CENTRAL TEXAS ARE UNDER OUTDOOR WATERING RESTRICTIONS. SAN ANGELO RESIDENTS ARE RESTRICTED TO WATERING LAWNS ONLY ONCE A WEEK...WITH ABILENE RESIDENTS ONLY ABLE TO WATER ONCE EVERY TWO WEEKS.

FIRE DANGER IMPACTS...

MORE THAN HALF OF THE COUNTIES IN WEST CENTRAL TEXAS ARE UNDER OUTDOOR BURNING BANS. THE KEETCH-BYRAM DROUGHT INDEX THAT IS USED BY THE TEXAS FOREST SERVICE COMBINES DROUGHT CONDITIONS WITH EXPECTED FIRE BEHAVIOR. THE LATEST VALUES SHOW TOM GREEN COUNTY IN THE MOST SEVERE CATEGORY... WITH SURROUNDING COUNTIES IN MODERATE TO SEVERE CONDITIONS.

AGRICULTURAL IMPACTS...

THE CROP MOISTURE INDEX ACROSS WEST CENTRAL TEXAS SHOWS THE SOUTHERN TWO THIRDS OF THE AREA UNDER EXTREMELY DRY CONDITIONS. THE USDA HAS DECLARED ALL 24 COUNTIES OF WEST CENTRAL TEXAS ELIGIBLE FOR DROUGHT DISASTER ASSISTANCE. IN ADDITION...14 COUNTIES OF WEST CENTRAL TEXAS HAVE BEEN APPROVED BY THE USDA FOR EMERGENCY GRAZING OF CONSERVATION RESERVE LAND.

OUTLOOK...

THE FORECAST FOR THE REST OF MAY INDICATES RELATIVELY DRY CONDITIONS WILL CONTINUE ACROSS WEST CENTRAL TEXAS. A FEW AFTERNOON THUNDERSTORMS ARE POSSIBLE ACROSS THE WESTERN HALF OF THE AREA WEDNESDAY AS AN UPPER LEVEL STORM SYSTEM PUSHES SLOWLY EAST...WEAKENING THE CAP ACROSS THE AREA. A LATE SEASON COLD FRONT WILL APPROACH THE AREA FRIDAY...BRINGING A CHANCE OF RAIN TO THE REGION FRIDAY AND SATURDAY. A RIDGE OF HIGH PRESSURE IS EXPECTED TO BUILD IN BY EARLY NEXT WEEK. THE LATEST 6 TO 10 DAY PRECIPITATION OUTLOOK CALLS FOR NEAR NORMAL RAINFALL ACROSS WEST CENTRAL TEXAS THROUGH MAY 25....WITH TEMPERATURES EXPECTED TO BE ABOVE NORMAL. THE EXPECTED DRY CONDITIONS WILL FURTHER AGGRAVATE THE DROUGHT ACROSS WEST CENTRAL TEXAS. MAY IS NORMALLY THE SECOND WETTEST MONTH OF THE YEAR FOR THE AREA. THE CLIMATE OUTLOOK FOR JUNE THROUGH AUGUST INDICATES NEAR NORMAL PRECIPITATION AND TEMPERATURES FOR WEST CENTRAL TEXAS.

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Appendix C – Items to include in a Drought Plan

The drought plan outlines procedures to follow during drought conditions in a WFO's area of responsibility. The plan should include at a minimum:

1. **Description of Local Characteristics of Abnormally Dry Conditions:**

Climate and water interests vary greatly across Southern Region, and therefore each WFO is the expert on what is considered abnormally dry conditions in their service area. For guideline purposes, conditions are considered abnormally dry in an area when less than 60% of normal precipitation has been observed during 1) a locally determined time period, or 2) the current water year. Each WFO should further refine these thresholds to better reflect conditions in their service area. Where possible, this should be tied in with values as set forth in the U.S. Drought Monitor.

2. **Products to be Issued During Drought Conditions:**

The plan should describe when to start and stop issuing drought-related products as described in this supplement, the frequency of issuance of these products, and the format and contents of the products. An example of a drought related ESF should be included as well.

3. **Coordination:**

The plan should include who to coordinate with, and a list of typical agencies involved with drought assessment/response in the WFO's service area.

RFC Support: The plan should describe what services are available from the supporting RFCs during abnormally dry conditions. Specific RFC services to support drought should be coordinated with the RFCs by the WFO drought focal point.

Appendix D – Drought Information Sources

1. The U.S. Drought Monitor: http://drought.unl.edu/dm

2. National Drought Mitigation Center's Drought Impact Reporter: http://droughtreporter.unl.edu/

3. RFC precipitation analysis maps: http://www.srh.noaa.gov/rfcshare/precip_analysis.php?location=SR http://www.srh.noaa.gov/rfcshare/precip_analysis_new.php (Experimental information service)

Additional precipitation analysis maps are also available on each of the SR RFC homepages in the left banner under the title "Observed Rainfall"

4. The Regional Climate Centers sponsored climate history search engine (XM-ACIS): http://xmacis.srcc.lsu.edu

5. The U.S. Geologic Survey - Current water resource conditions map: http://water.usgs.gov/waterwatch

6. Soil Moisture Data from the CPC: http://www.cpc.ncep.noaa.gov/soilmst/w.shtml

7. Soil Moisture from the University of Washington Experimental Soil Moisture Chart:

http://www.hydro.washington.edu/forecast/monitor/index.shtml

8. Local WFO-developed Daily Climate Products (CLI) products